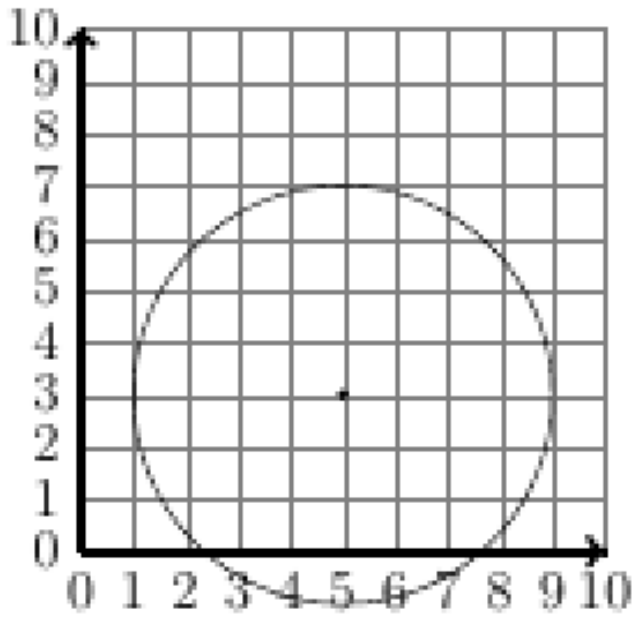
Topic: Equation of a circle

Question: What is the equation for the given circle?



Answer choices:

A $(x+5)^2+(y+3)^2=4$

B $(x-5)^2+(y-3)^2=4$

C $(x-5)^2+(y+3)^2=4^2$

D $(x-5)^2+(y-3)^2=16$

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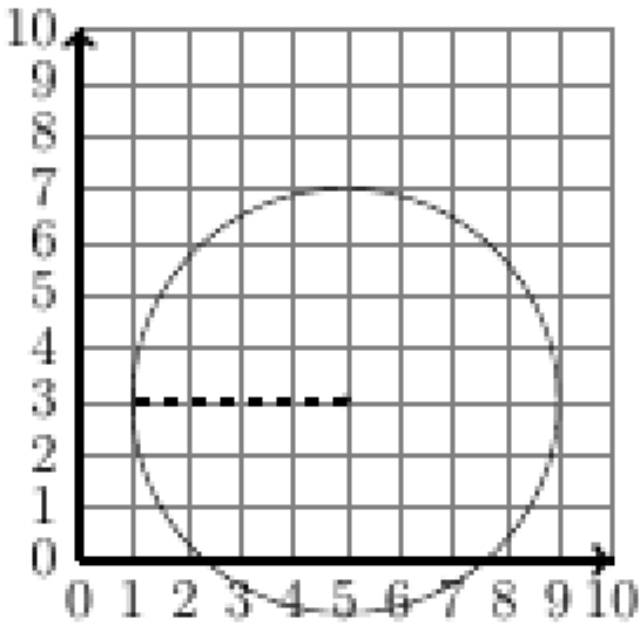
Solution: D

The center of the circle is (5,3).



That means 5 will be h and 3 will be k in the equation of the circle.

The radius is shown with a dashed line. It is 4.

So $r = 4$.

$$(x - h)^2 + (y - k)^2 = r^2$$

Substituting the values from the figure, we get

$$(x - 5)^2 + (y - 3)^2 = 16$$

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Topic: Equation of a circle

Question: Find the intercepts.

What are the x-intercepts of the circle $(x+4)^2+(y-3)^2=25$?

Answer choices:

A $(1,0),\ (-9,0)$

B $(-4,0),\ (3,0)$

C $(0,0),\ (-8,0)$

D $(5,0),\ (-4,0)$

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Solution: C

$$(x+4)^2+(y-3)^2=25$$

At the x-intercepts, $y=0$, so let y be zero, and rewrite the equation.

$$(x+4)^2+(0-3)^2=25$$

$$x^2+8x+16+9=25$$

$$x^2+8x=0$$

$$x(x+8)=0$$

$$x=0 \text{ or } x=-8$$

x-intercepts are $(0,0)$ and $(-8,0)$.

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Topic: Equation of a circle

Question: Find the center and radius.

What are the center and radius of the circle $(x + 5)^2 + y^2 = 11$?

Answer choices:

A $(-5,0),\ 11$

B $(-5,0),\ \sqrt{11}$

C $(5,0),\ \sqrt{11}$

D $(0,5),\ 11$

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Solution: B

$$(x+5)^2+y^2=11$$

Following the pattern $(x-h)^2+(y-k)^2=r^2$ tells us that

$$h=-5$$

$$k=0$$

$r^2=11$, (i.e. $r=\sqrt{11}$)

The center of the circle is $(-5,0)$ and the radius is $\sqrt{11}$.

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